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ABSTRACT

Recent developments have broadened the definition of literacy to multiple literacies--bodies of knowledge, skills, and social practices with which we understand, interpret, and use the symbol systems of our culture. This compilation looks at the various literacies as the application of critical abilities to several domains of importance to adult life in the 21st century. It begins with an examination of critical literacy for "challenging times," making the case for its potential to move adult literacy education beyond "neutral and neutralizing notions" of technical skill. In the next chapter, how people acquire digital/electronic literacy and how adult educators can support this effort are examined. Environmental literacy is used as an example of education for effective critique rather than instrumental purposes in the third chapter. The fourth chapter takes a different perspective on health literacy by addressing its importance for all adults, not just those with low levels of basic skills. An annotated resource list provides sources of more information about critical aspects of the following literacy domains: multiple, critical, civic, digital/electronic, environmental, financial, geographic, health, media, and technological/scientific. Contains 124 references. (SK)

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Multiple Literacies

2003

A Compilation for Adult Educators

by

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Introduction

by Sandra Kerka

Literacies are tools for reading the world—bodies of knowledge, skills, and social practices with which we understand, interpret, and use the symbol systems of our culture (Kellner 2002; Street 2003). The conventional understanding of literacy (singular) is reading, writing, and numeracy (Gee 2001). Recent developments are broadening this definition by including a wide range of symbol systems—reading, writing, viewing, speaking. Being literate thus means being able to combine these systems in complex ways to create meaning (Snyder 2002; Street 2003). These developments include the following:

- The New Literacy Studies that emerged in the 1980s and 1990s, which describe literacies as social practices, not simply neutral technical skills (Barton, Hamilton, and Ivanic 2000; Street 2003)
- The influence of Paulo Freire on a view of literacy that includes social and cultural ways of reading the world for meaning (Shambaugh 2000)
- The concept of literacy as the ability to master discourses, defined as ways of being in the world that integrate particular ways of saying, writing, doing, valuing, and believing (Gee 2001)
- The expansion of communications technologies, creating multiple modes of meaning making (Cope and Kalantzis 2000) with the potential to change cognitive processes (Warschauer 1999)

As Glynda Hull notes in her critical literacy chapter (p. 4), the view of literacy as neutral technical skills tends to predominate in the United States. Street (2003), Lankshear and Knobel (2003), Cope and Kalantzis (2000) and others advocate alternative perspectives as more suited to life in the 21st century. These authors suggest that a more useful concept is multiple literacies, ways of reading the world in particular contexts—technological, health, information, media, visual, scientific, and numerous others.

However, the notion of multiple literacies is not without controversy. To Jones (1997), "literacy has become a much debased term, not just because it has attracted a long list of modifiers (computer literacy, media literacy), but also because its core reference to reading has been blurred" (p . 7). Others question why we are using literacy as a metaphor for everything else; Wysocki and Johnson-Eilola (1999) suggest that it may be a shortcut for a wide range of skills and practices; that "literacy" is appended to other terms because it encompasses everything we think worthy of consideration. One answer to this critique may be that reading is still integral to the notion of literacy; however, it is reading in the sense of interpreting not just words but also signs, symbols, pictures, sounds...and the world. In addition, interpretations differ in different cultures or contexts (Cope and Kalantzis 2000). Different contexts of everyday life present different literacy demands, different perceptions of literacy, different levels and kinds of social power and knowledge (Barton et al. 2000; Street 2003).

Although we adopt a pluralistic view of literacies in this compilation, Tyner (1998) reminds us that their competencies and characteristics overlap: "Multiliteracies suggest a splintering of literacy into discrete parts that belie the true nature of literacy as a complex and intersecting set of social actions" (p. 65). Lankshear and Knobel (2003) identify three dimensions common to the multiple literacies:

1. *Operational*: competence with tools, procedures, and techniques for handling language proficiently; reading and writing in a range of contexts adequately

2. *Cultural*: competence with the meaning system of social practices; understanding text in relation to context and the appropriateness of ways of reading and writing

3. *Critical*: awareness that social practices (including literacies) are socially constructed and selective—they include some values, rules, purposes and exclude others

The critical dimension is crucial:

> Literacies, conceived from a sociocultural perspective generally and a multiliteracies perspective specifically, entail a vast amount of knowledge. Being literate involves much more than simply knowing *how* to operate the language system. The cultural and critical facets of knowledge integral to being literate are considerable. Indeed, much of what the proponents of multiliteracies have explicated are the new and changing knowledge components of literacies under contemporary social, economic, cultural, political, and civic conditions. (ibid., p. 12)

> Individuals should be provided with opportunities to acquire the capacities *to* understand, critique, and transform the social and cultural conditions in which they live; to be creative and transformative subjects and not just objects of domination and manipulation. This necessitates developing abilities for critical thinking, reflection, and for engaging in discourse, cultural creation and political action and movements. (Kellner 2002, pp. 164-165)

Therefore, this compilation looks at the various literacies as the application of critical abilities to these different domains. The compilation begins with Glynda Hull's examination of critical literacy for "challenging times," making the case for its potential to move adult literacy education beyond "neutral and neutralizing notions" of technical skill. In the next chapter, Larry Mikulecky examines how people acquire digital/electronic literacy and how adult educators can support this effort. Ralf St. Clair uses environmental literacy as an example of education for effective critique rather than instrumental purposes in the third chapter. In the fourth chapter, I take a different perspective on health literacy by addressing its importance for *all* adults, not just those with low levels of basic skills. These topics were chosen because, first, critical literacy underlies the others; second, the literature on digital and environmental literacy is sparse in adult education; and third, the health literacy chapter addresses a broader dimension than the adult basic education perspective of much of the literature.

Many more chapters could be written about multiple literacies. Because this compilation can address only a selection of them, an annotated resource list is provided to identify sources of more information about critical aspects of multiple literacies.

Critical Literacy for Challenging Times

by Glynda A. Hull

We live in challenging times. Violence and terrorism, local and global inequities of an extreme kind, a failure of institutions and leaders to protect and guide, and a palpable sense that differences in ideologies, values, and allegiances separate us quite insurmountably, even as we are witness as never before to each other's realities—such is our unsettled, unsettling world. It is hardly surprising that many find it difficult to envision change for the better or to imagine an empowered self capable of directing an individual's actions. We are desperately in need, many educators would argue, of ways of thinking and being, teaching and learning, reading and writing (cf. Gee 1996) that allow us some purchase on individual agency and collective change, as well as some sense of an ethical and moral vision for how to relate one to another. Since the 1980s perhaps the most powerful pedagogical and theoretical vision of this kind has been gathered under the label "critical literacy."

In common usage the term "critical literacy" often appears in conjunction with the term "critical thinking" as a designation of the ability to use language and texts analytically or to solve problems. However, in the traditions recounted here, critical literacy means a great deal more. It includes not only learning to read and write in a technical sense, or the ability to think abstractly or to reason, but learning as well to take a critical stance toward one's historical, economic, ethnic, racial, and gendered positioning (cf. Lankshear and McLaren 1993). The critical literacy movement has never been prominent in the United States and certainly has never been embraced in this country at the policy level as a framework for educating children or adults (cf. Beder 2003). Yet there is a rich and ever growing body of literature on critical literacy, most of it a combination of reflective theorizing and mindful documentation of practice. In this essay I selectively review that literature, focusing especially on the last 5 years, with an eye toward what its most recent formulations offer educators and students in these challenging times.

Critical literacy means learning to take a critical stance toward one's historical, economic, ethnic, racial, and gendered positioning

Critical Literacy: Freire and Beyond

Critical literacy as we know it today had its beginnings in the 1970s in Brazil with Paulo Freire, beloved educator and arguably the most significant educational thinker of the 20th century. Freire was himself influenced by Karl Marx's theories of capital and class-based conflict, Lev Vygotsky's (1978) understandings of learning as fundamentally social, and an abiding faith in the tenets of Christianity (Freire 1996). Out of this amalgam came theory and methods for teaching illiterate adults to read and write "the word and the world." This famous phrasing, repeated often in Freire's wide-ranging body of work, juxtaposes the commonplace that literacy is simply decoding and encoding against a politically, ethically, and morally charged idea of literacy as a coming to life of a sense of self as an actor, a subject able to influence, indeed to shape, one's history or life course. To understand literacy in this way was a crucial epiphany for the disenfranchised Brazilian peasants about whom Freire wrote his most famous and enduring account of his ideas, ***Pedagogy of the Oppressed*** (1970).

Freire's formulation that an empowering literacy must always be more than a neutral technology or skill is still an epiphany that inspires many literacy specialists in contemporary times and in various societies. Such ideas have endured because they provide a theoretically compelling and practically vivid account of literacy as more than an instrumental skill. This understanding of the potential power of literacy is an insight that many adult literacy teachers intuit, but rarely see reflected in their working conditions, the curricula they are supposed to use, or the programs they are hired to run. The conundrum, of course, has been how to take Freire's powerful ideas about literacy, and his equally important accompanying beliefs about the desired dialogic relationships between teachers and students, and use them in quite different social and political contexts, such as the current moment in the United States. Freire often reminded us that it is impossible to transplant such ideas from one sociopolitical, sociocultural context to another; they have, rather, to be reinvented. Recent work on critical literacy has attempted to do just that, reinventing what it means to teach and engage with critical literacy, and expanding, qualifying,

and emending Freire's original formulations. Such projects are especially crucial now, as U.S. adult literacy teachers experience increasing demands to teach specified curricula and to define their students' growth not in terms of empowerment, identity, or agency through learning to read the word and the world, but in terms of improvement on standardized assessments (cf. Degener 2001).

It stands to reason, then, that contemporary work on critical literacy is by nature definitional, as educators attempt to articulate and implement Freire-inspired but locally enacted and theoretically enriched versions of reading and writing the word and the world. A few summary statements will serve as helpful introductions to current conceptions. Luke and Freebody (1997a) and their colleagues have done extensive work on critical literacy in Australia, including inserting it into their state's school curriculum. They note that an array of philosophies and interventions are termed critical literacy and clarify that they don't wish in their edited volume to advocate a particular version of literacy or a particular pedagogy, but rather, can point to shared assumptions that center on furthering the cause of social justice: "Although critical literacy does not stand for a unitary approach," they write, "it marks out a coalition of educational interests committed to engaging with the possibilities that the technologies of writing and other modes of inscription offer for social change, cultural diversity, economic equity, and political enfranchisement" (p. 1).

Critical Literacy, Language, and Identity

Ira Shor (1999), long-time U.S. advocate for critical literacy approaches and a collaborator with Freire, emphasizes in another recent edited volume the connection between language and the critical literacy project:

> We are what we say and do. The ways we speak and are spoken to help shape us into the people we become. Through speech and other actions, we build ourselves in a world that is building us. We can remake ourselves and society, if we choose, through alternative words and dissident projects. This is where critical literacy begins—words that question a world not yet finished or humane. (p. 1)

Most contemporary social theorists would also note how difficult it is to remake ourselves through language and would instead emphasize, with Bakhtin (1981), how we must struggle to claim others' words as our own. Yet Shor is right to characterize language as a medium for self-construction and to emphasize the transformative potential of certain language practices. This, indeed, was Freire's central message. Norton and Toohey (in press), in their introduction to an edited volume on critical approaches to second language teaching, helpfully explain that "language...is a practice that constructs, and is constructed by, the ways language learners understand themselves, their social surroundings, their histories, and their possibilities for the future." The role for critical literacy (and language) instructors, then, is to assist students in understanding how the language of others, including that of written texts, constructs who readers are, and in how in writing and speaking and using a range of semiotic systems, we can construct alternative versions of our selves. (For other definitions and taxonomies related to critical literacy, see Fehring and Green 2001; Hamilton 1996; Lankshear et al. 1997.)

To speak of constructing selves may seem too far a cry from the nitty-gritty of literacy classrooms and the processes of learning to read and write that form their core. Yet, if we have learned anything from critical literacy theory over the last decade and Freire's work over the previous 20 years, it is that language and literacy practices are bound up with identity issues, and identity issues of necessity connect to issues of power, indexing one's position in relation to other individuals and groups socially and economically. There are, in fact, helpful guides for conceptualizing and incorporating such insights about identity and power in relation to texts into curricula. In the Australian context, for example, there are detailed examples of how reading can be defined and enacted in classrooms as a range of practices—coding, text-meaning, pragmatic, and critical (Luke and Freebody 1997b; cf. Lohrey 1998). Readers need, then, expertise at being

"code breakers," at understanding how texts work linguistically, but they need as well expertise at being a text analyst and critic, able to consider, "What is this text trying to do to me? In whose interests?" Such a question is quite reminiscent of Freire's (1970) ironic query of traditional reading materials for adults many years ago: "Maria picks grapes in the vineyard." Yes, but whose interests does she serve?

In the critical literacy literature on workplaces, there are likewise guides for understanding how the functions that texts serve run the gamut from basic skills, such as copying and labeling, to critical perspectives, such as the rights and responsibilities related to who is expected to read and write (Hull 2000; see also Castleton 2002). It is important to note that whether a particular workplace literacy event is implicated in power relations has to do not with the nature or complexity of the text, but with the social relations that define the event. There is also research on literacy within the context of work that makes clear how new workplaces, with their increased textual demands and related work practices (cf. Mikulecky 2000), construct workers in particular ways, and how workers both comply with and resist these roles. Such research stands in contrast to most characterizations of the skill demands of new workplaces, which tend to cast skill as neutral and literacy as a technical skill (Comings, Sum, and Uvin 2000; Hull 1997). Since much of literacy funding in the United States is tied to preparation for work (Askov 2000), this neutral skill-based version of literacy tends to predominate. How to move the discourse of policy in the United States toward a critical view of literacy and work is an important avenue for advocacy and research.

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In many characterizations of the relationship between changing workplaces and literacy requirements, workers are found wanting and are thought responsible for problems related to quality and productivity. Or most recently, there is worry that a lack of skilled workers is a primary roadblock to an economic upturn, and vocational and basic skills programs are founded on the supposition of such deficiencies in an effort to remedy them. Although never denying that many people need assistance in acquiring literacy and the special versions of literacy associated with new economies, a traditional concern of critical literacy teachers has been the way that adult learners are often conceptualized as deficient. In ***Pedagogy of the Oppressed*** Freire (1970) wrote eloquently about a belief in human abilities, including the abilities of illiterate and poorly literate people, and in much new work in critical literacy studies, there are likewise efforts to articulate the ways in which needs and challenges are as social in origin as they are individual. By analyzing the life stories of marginalized adults in Mexico City, Hernandez (2004), for example, uncovered how learning is dramatically facilitated or hindered by the kinds of cultural and symbolic resources that are differentially distributed among social groups rather than individuals. To be sure, marginalized adults did not have the required technical skills for reading and writing, but in addition they often did not have access to supportive institutions and teachers and the necessary free time from work or family responsibilities to engage in learning.

Norton Peirce, through her studies of English as a second language (ESL) classrooms (1995, 2000), has proposed that, rather than attributing participation or nonparticipation in adult programs to the psychological construct of motivation, we think in terms of "investment" and learners' complex social histories, multiple desires, and the competing demands on their time. (See also Skilton-Sylvester 2002.) Through her historical research and detailed interviews, Brandt (1999) has proposed the notion of "literacy sponsors," agents who facilitate participation in literacy, and whose presence or absence can account for different trajectories for individuals. In each of these cases, researchers convincingly demonstrate that we can best understand adults' literacy performances and capabilities by examining the historical, social, and economic contexts of their lives; such an approach has, in fact, become a tenet of critical literacy studies.

In a similar way, recent critical approaches also question some of the key assumptions of the early literature and what we recognize now as its simplistic dichotomies—between, for example, oppression and empowerment (Pennycook 2001) and its tendency to promulgate "single-strategy pedagogies of empowerment, emancipation, and liberation" (Luke and Gore 1992, p. 7). One line of research has taken issue with Marx's notion of "false consciousness" that underpins Freire's

work and leads to the belief that oppressed or marginalized people lack critical consciousness and must be enlightened by our literacy projects. Cushman's (1999) ethnography of inner-city residents and institutional language suggested that "the disadvantage that community members faced had more to do with the ideologies and language use of gatekeepers than it did with their lack of literate or critical ability" (p. 270; see also Martin 2001).

Current critical literacy studies offer a framework that goes beyond the social critique that was the bedrock of Freire's early work. Instead of relying on traditional Marxist class-based analysis, current work acknowledges a range of complex influences on identity formation and opportunities for and dispositions toward literacy and language development. Feminists in particular have theorized how gender in conjunction with class, ethnicity, race, disability, sexuality, and age can mediate access to material and symbolic resources and opportunities. A range of new studies has analyzed the complex interplay of constraints that can hinder women's acquisition and practice of literacy, and they have also explored the implementation of a feminist critical pedagogy that privileges storytelling and participant structures and forms of interaction to enact and practice critical voices and selves (Pavlenko in press; cf. Frye 1999, McMahill 2001). Like the studies of work in which issues of power and identity are foregrounded, this scholarship documents practices that contrast those that are characteristic of many traditional adult programs, where literacy is treated as a technical skill, there is an emphasis on individual motivation as an explanation for success, and ideologies are "gender blind" (Prins 2001, p. 59). Yet, one important finding that emerges from the new critical studies of women's literacy programs is also a cautionary note. Instructors must walk a fine line between a focus on individual women's daily concerns and needs and a focus on what the program considers "emancipatory." Many programs document powerful personal benefits for participants—the opportunity to develop friendships, practice linguistic survival skills, or gain confidence as a communicator—yet fret that such benefits rarely contribute to larger social change and may reinforce women's traditional gender roles and marginal status. These important tensions in adult literacy programs are often invisible to program organizers and merit attention (Gowen and Bartlett 1997; Katz 1999; Stromquist 1997; cf. Purcell-Gates and Waterman 2000).

Finally, recent practitioners of critical literacy have found new ways to enact pedagogies that foster agency and social justice. Theorists and practitioners who have drawn on Freire's work have, over the years, described and critiqued different versions of a "critical pedagogy" whereby students learn to question the status quo and become conscious of themselves as potential agents of change (cf. Ellsworth 1992; Giroux 1997; Giroux and McLaren 1992). Such a pedagogy helpfully contrasted what Freire pejoratively termed a "banking education," whereby passive students are filled with their teachers' knowledge, and to which students have long responded with various kinds of resistance. Recent accounts of critical pedagogies acknowledge how difficult it is for teachers to enact a critical pedagogy, but also provide some inspiring examples of teachers' attempts to do so. One such account is Brown's (2000) work in Alaska as a teacher on an Athabascan Indian reservation and his rethinking of various teaching approaches, including Foxfire pedagogies and practices developed within the field of basic writing. His aim in this work is to—

> illustrate the possibilities for a pedagogy in the bicultural borderlands that more truly serves the interests and needs of the marginalized, borderland learner: a pedagogy whose goal is not acculturation, but agency; that is not predicated on the transmission of knowledge, but on the transference of authority; that does not foreground assimilation into the dominant culture, but spiritual redemption through reconnection to an indigenous subculture. (p. 2)

This aim and such language will be familiar to readers of Freire; what is different and inspiring about Brown's work is the concrete way he takes readers into his students' world, his frank account of what works and what doesn't in terms of available pedagogies in his personal journey as a teacher, and his demonstration that critical pedagogies must begin with changes in the educator, pedagogically and politically.

Directions for Research and Practice

This brief review ends with two studies from which can be gleaned new and needed directions for critical literacy research and practice. In the first Stein (in press; cf. Thesen 2001) proposes what she calls "multimodal" pedagogies for language and literacy classrooms. If writing is the mode of communication usually valued in schools, Stein argues that using other modes, such as speech and oral storytelling, can be empowering for students. Drawing on insights from classroom-based research with diverse ESL learners in Johannesburg, South Africa, and framed within the post-apartheid era of reconstruction and transformation, Stein's work boldy challenges what she calls "the hegemony of language, particularly written language, in the ESL classroom." She explains:

> Multimodal pedagogies conceptualize pedagogy as semiotic activity which occurs in a particular site and within relations of power, culture, and history. Classrooms are semiotic spaces in which multimodal texts are constantly being produced and transformed by human beings who are the agents of their own meaning making. Each multimodal text can be viewed as a complex sign in response to/in resistance to/in transformation of other signs. (in press, n.p.)

The many examples Stein offers include the oral performances of a girl, silent in many contexts, who enacted a traditional African folk tale as part of a storytelling project on popular culture. Stein studied this girl's work in performative, written, and visual modes and came to understand the extent to which she inhabited each differently and preferred one over another. Provocatively, Stein also explores the relationship between words and silence by illustrating the tensions around modes of representation in relation to what is unsayable. The poignant example that she uses is how a death from HIV/AIDS among Black families is often unsayable in language, but can be expressed via a silent hand gesture.

In the United States as well as international contexts there is much work exploring the intersection of technology and literacy (Lankshear and Knobel 1998), and studies of critical media literacy are flourishing as well (Alvermann and Hagood 2000). The emphasis during the decade of the 1990s was, and continues to be, preparing adults for work—a focus, that is, on instrumental uses of literacy rather than critical perspectives or aesthetic forms. Perhaps the pendulum is about to swing back, as interest returns to multimodalities, and spoken word performances, music, and multimedia become ever more visible parts of youth culture (Hull 2003). Yet most research and practice in these areas still does not include adults and adult programs in generative ways; rather, adults' relationships with technology are often constrained to focus primarily on job training and computer literacy, and multimodal literacy is viewed as a luxury or a frivolity. Stein argues that multimodal pedagogies "allow for the expression of a much fuller range of human emotion and experience; they acknowledge the limits of language, admit the integrity of silence, and do not presume closure" (in press, n.p.). It is worth considering how adult educators can use multimodalities, especially at this historical moment, to help students mediate powerful representations of self, other, community, and world.

The second study that points to future directions for research and practice is an exploration of how critical approaches to literacy are currently being made to intersect with the process of democratic renewal in Scotland (Crowther, Tett, and Galloway, 1999). In some important ways the public policy context around adult literacy in Scotland parallels that in the United States. There are calls for a more highly skilled and adaptive work force, and improved literacy is linked primarily with economic improvement, even though joblessness seems to have less to do with a lack of literacy than a lack of jobs. There is a public consensus in Scotland that literacy is unproblematic, something that is commonsensical and that everyone should agree about.

In contrast to this orthodoxy, Crowther and colleagues call for a conception of adult education "in which adult students are located as active (and, if necessary, dissenting) citizens in a democratic society and thus require an education to enable their voice to be heard in the process of defining rights and responsibilities" (p. 213). Thus, part of their work has focused on what they call "the cultural formation of students' voices" (p. 215). One project combines a language awareness component—many literacy students feel inadequate because of their local speech patterns that identify them as non-British—with projects emphasizing social and cultural action, such as research on the development and suppression of languages. Crowther and colleagues advocate enabling people to learn the dominant literacy critically while also valuing vernacular literacies and cultural resources. This does not mean, they hasten to add, that "people's vernacular literacy is privileged" but that literacies are multiple and none is neutral. "Vernacular and dominant literacies may then become a critical resource for learning" (p. 216), and "adult literacy practice can make a contribution to the process of building a new Scotland" (p. 217).

What is appealing about this adult literacy work...is the way it connects critical conceptions of literacy, programs of adult education, the formation of empowered individual and collective identities, and projects of social and cultural change.

What is appealing about this adult literacy work in Scotland, and what we might attempt to duplicate regarding it in the United States, is the way it connects critical conceptions of literacy, programs of adult education, the formation of empowered individual and collective identities, and projects of social and cultural change. Such linkages are quite far from neutral and neutralizing notions of literacy as merely a technical skill and classrooms that are inoculated from the world through regimes of testing and reporting. To participate meaningfully, influentially, and responsibly in these challenging times, adult educators will need to draw on, contribute to, and continually remake the critical tradition in literacy studies, drawing threads from the individual to society to the world.

Digital/Electronic Literacy

by Larry Mikulecky

Digital and electronic literacy are playing increasing roles in the work and study lives of adults. The U.S. Dept. of Commerce reports that as of "September 2001, about 65 million of the 115 million adults who were employed and age 25 and over use a computer at work" (National Telecommunications and Information Administration 2002, 57). In the 13 months between August 2000 and September 2001, use of the Internet at work increased from 26.1 percent of adults to 41.7 percent. Forty-one of the 50 U.S. states report using distance education to deliver GED instruction with the Internet being the most often mentioned technology (Mikulecky 2003; Parke and Tracy-Mumford 2000). Adult educators preparing learners for employment or further education are attempting to determine exactly what is meant by *digital literacy* and *electronic literacy* and more important, what about these forms of literacy should be addressed by educators?

Definitions of Digital Literacy

What digital literacy means is in flux as new forms of digital information and delivery emerge. The flux is caused both by the steady barrage of new technologies and software to be mastered and by expanded definitions of what literacy means in the 21st century. Much of this discussion and research falls under the labels of "new literacies" and "multiliteracies" (Anstey 2002; Coles and Hall 2001; New London Group 1996). At a very broad and general level, digital literacy is the ability to assimilate, judge, and communicate information presented in a wide variety of digital/electronic formats. The specific mix of skills, tasks, and mastery of technologies necessary to be digitally literate continues to broaden at a rapid rate.

What digital literacy means is in flux as new forms of digital information and delivery emerge.

Paul Gilster popularized the term *digital literacy* in his 1997 book of that title. The book contains no single, succinct definition of digital literacy, but Carolyn Pool (1997) did get Gilster to provide his definition for an interview in ***Educational Leadership***. Gilster stated: "Digital literacy is the ability to understand information and—more important—to evaluate and integrate information in multiple formats that the computer can deliver...Multimedia computers enable students and teachers to download video, audio, and photos" (Pool 1997, p.6). In the interview, Gilster pointed out the interactivity of constructing information that comes with asking questions and gathering information in online forums and even posing questions directly to authors and artists. He stressed the importance of developing sophisticated search techniques.

Bawden (2001) reviewed the concepts of *information literacy* and *digital literacy* using an academic literature survey and analysis of these terms and related concepts in the academic literature from 1980-1999. His analysis focuses upon the most commonly used terms, which include the following literacy labels: information, computer, library, media, network, and digital. Information literacy is by far the most prevalent term used in the academic literature. It climbed from one mention in 1981 to 109 mentions in 1999 and a total of 521 mentions over the 2 decades. Computer literacy was a relatively close second with 395 mentions over the 2 decades. Network literacy (15 mentions) and digital literacy (12 mentions) didn't appear until the mid to late 1990s with only a few mentions per year. Bawden examined and discussed the various renditions of these and related terms attempting to differentiate among knowledge, skills, and attitudinal predispositions stated and implied in each definition. He concluded:

> To deal with the complexities of the current information environment, a complex and broad form of literacy is required. It must subsume all the skill-based literacies, but cannot be restricted to them, nor to any particular technology or set of technologies. Understanding, meaning and context must be central to it. It is not of importance whether this is called information literacy, digital literacy, or simply literacy for an information age. What is important is that it be actively promoted as a central core of principles and practice of the information sciences. (Bawden 2001, p. 251)

Standards for Learning Digital Literacy

There are currently no standards in the United States for what *adults* should know and be able to do with technology and digital literacy. There is a clear message coming from the U.S. Office of Vocational and Adult Education (OVAE), however, that adult education programs are to link more clearly to K-12 academic standards and forms of accountability.

On March 4, 2003, Assistant Secretary of Education Carol D'Amico testified before the House of Representatives Subcommittee on Labor/Health and Human Services/Education Appropriations. She indicated that the proposed budget for OVAE outlines "fundamental changes" believed necessary in the face of changing economic and social demands. The testimony underscored plans to incorporate into adult education the principle of accountability for student performance. D'Amico outlined a vision that included programs providing documented results of adult learner achievement of academic skills. She highlighted New York's moves to adapt K-12 academic standards to adult education programs. In addition, a good deal of the testimony as well as information available on the OVAE webpage bespeaks a concerted effort to link adult education more closely to employment, career paths, the "knowledge economy," and transitions to postsecondary education.

Though there are no adult standards for digital literacy learning, there are broadly accepted K-12 standards that are relevant to adults and could easily be incorporated into D'Amico's vision for adult education programs receiving taxpayer support. The International Society for Technical Education (ISTE) through its National Educational Technology Standards project has attempted to provide a detailed set of standards and indicators for what students at various age levels (PreK-12) should be able to do with technology. These standards have been adopted by 44 of the 50 states in the United States and provide a broad sense of what students should be able to do in relation to technology. Standards for high school students that most closely relate to what has been described as digital or electronic literacy are of the most use for adult educators to consider. They include the following (ISTE 1998):

- Students use technology tools to enhance learning, increase productivity, and promote creativity.
- Students use productivity tools to collaborate in constructing technology-enhanced models, preparing publications, and producing other creative works.
- Students use telecommunications to collaborate, publish, and interact with peers, experts, and other audiences.
- Students use a variety of media and formats to communicate information and ideas effectively to multiple audiences.
- Students use technology to locate, evaluate, and collect information from a variety of sources.
- Students use technology tools to process data and report results.
- Students evaluate and select new information resources and technological innovations based on the appropriateness of specific tasks.
- Students use technology resources for solving problems and making informed decisions.
- Students employ technology in the development of strategies for solving problems in the real world.

Facility with several forms of digital and electronic literacy is already required in many workplaces. Mikulecky and Kirkley (1998) have documented such uses in manufacturing quality assurance groups, offices, and customer service occupations. They provide detailed examples of how relatively low to moderate paying jobs in customer service and restructured manufacturing now require adults to interact regularly with technology and digital literacies.

> Workers without a great deal of training and education are now expected to use technology to gather information, rapidly answer questions, and often make decisions formerly made by managers...computer technology and retrieval makes accessible to

> customer service representatives the equivalent of thousands of pages of information. Rapidly accessing accurate information, updating the information base, and making good decisions have now become integral parts of many jobs. (Mikulecky and Kirkley 1998, p. 298)

Though not all jobs require use of technology and digital literacy, it is clear that the number of jobs using this technology is rapidly increasing. As indicated at the beginning of this chapter, by 2001 more than half of employed adults reported using such technologies for their jobs. Though not all learners in adult education programs are preparing for postsecondary education and employment, it is clear that federal agencies are moving to link adult education programs to K-12 academic standards, preparation for postsecondary education, and associated forms of accountability. The vast majority of states have already endorsed clear standards for what students should know and be able to do with technology. It seems very likely that these same standards will make their way to adult education programs.

How Do People Acquire Digital/Electronic Literacy?

The concept of simply mastering electronic literacy is replaced by a recognition that multiple literacies must be learned and that new ones must be constantly mastered as old literacies fade and are replaced.

As indicated, there has been a good deal published about definitions of various sorts of new literacies and changing electronic literacy demands. Many scholars, organizations, and most states have weighed in on what *should* be learned. Very little research, however, has been done to determine *how* people actually learn what they need to know. Selfe and Hawisher (2002) have provided one of the few documented answers to this question by compiling the electronic literacy autobiographies of 55 professional communicators participating on the *Techwr-l listserv*. Among the areas examined by the researchers were "the processes through which they learned to use computers to read and write in computer-based contexts" (Selfe and Hawisher 2002, p. 235). Analysis of the detailed autobiographies allowed the researchers to develop several case studies and to make several observations about patterns across their data. The observations are made with the profession of technical communication in mind, but most of these observations are also relevant for the general population. Like most of the scholars cited earlier, Selfe and Hawisher also observe that one "must be able to read, write, and navigate in technological contexts. This new definition of literacy now constitutes a de facto standard" (p. 260).

The researchers also noted that literacies have life spans and that various sorts of literacy "emerge, compete, and fade" (pp. 261-263). They conclude that one needs "to deal flexibly with both emerging and fading forms of literacy as communication systems continue to undergo rapid change in the cultural ecology of 21st-century America" (p. 263). The concept of simply mastering electronic literacy is replaced by a recognition that multiple literacies must be learned and that new ones must be constantly mastered as old literacies fade and are replaced.

The researchers report that though some of these digital literacies were reportedly learned from instructors or advisors, "more often than not, a friend or sometimes a younger family member came to the rescue. In many of the cases we encountered in this project, teachers and parents lacked the knowledge to transmit the requisite computer expertise" (p. 267). Analysis of this finding led the researchers to recall Margaret Mead's (1970) prediction of a coming "prefigurative" culture in which adults lack the necessary knowledge and abilities to pass on to the next generation. They note that, unlike previous generations, adults cannot provide all that students need in relation to electronic literacy. They suggest that "students must be willing to experiment with emerging forms of digital and even nonalphabetic literacies and to help each other master the skills needed to succeed with these forms" (p. 268).

The Digital Divide

Since the mid-1990s, there has been concern expressed that access to the Internet and digital information has not been available on an equal basis with race, gender, geographical location, and socioeconomic class being major factors of inequity. For 1997, the National Telecommunications and Information Administration (NTIA) reported that White households were twice as likely

(40.8%) to own a computer than were Black (19.3%) or Hispanic (19.4%) households and that this relationship held across all income levels (NTIA 1998). Since 1998, there has been rapid growth in computer ownership and Internet use with the most rapid growth occurring for minority groups. Though the gaps by race remain, they appear to be narrowing. For 2001, NTIA reported the following Internet use figures: White (59.9%), Black (39.8%), and Hispanic (31.6%). There were virtually no gaps by gender. Gaps by education level remained striking in 2001: less than high school (12.8%), high school/GED (39.8%), bachelor's degree (80.8%). Similar gaps occurred by family income level with only 25% use by those below $15,000 and regular incremental growths to 78% use by families earning more than $75,000 (NTIA 2002).

Gaps in computer and Internet access may be narrowing slightly in the race category as more computers are purchased by families. It is clear, however, that extreme gaps in access and usage still exist between the general population and those with low education levels and incomes (i.e., most adult basic education students). Adults with low incomes and education levels are not going to learn at home from their children or other relatives (as did several respondents in the Selfe and Hawisher study cited earlier). Adult education classes may indeed be the only access available to many adults for learning digital literacy.

What This Information Means for Educators

Most scholars suggest educators prepare learners for electronic/digital literacy demands using a mix of structured instruction and peer support. For example, ***National Educational Technology Standards for Students*** (ISTE 1998 p. 2) calls for a broader use of "new learning environments" that emphasize student-centered learning, collaborative work, active/exploratory inquiry-based learning that incorporates critical thinking, informed decision making, and use of authentic real-world materials and contexts. Both teachers and peers would be sources of information and instruction.

In ***Cyberliteracy: Navigating the Internet with Awareness***, Gurak (2001) notes that millions of Internet sites include a growing number of hoax sites, hate sites, biased sites, and sites riddled with misinformation. She suggests guidelines for an expanded sense of how to be critical and discriminating about this explosion of information. Minkel (2000) concurs about the need to teach methods for evaluating website information and includes a list of websites that discuss approaches to this sort of evaluation. Berson and Berson (2003) suggest tips for teachers to use when introducing students to the Internet and other information technologies.

What emerges, here, is recognition that teachers can't teach everything. They can, however, learn more themselves, teach ways for learners to critically evaluate the quality of information they find, create learning environments in which learners use electronic literacy to accomplish real tasks, and build in ways for learners to collaborate and teach others what they've learned (both about technology and the topic being studied). The International Society for Technology in Education (2001) has developed standards for what *teachers* should know and be able to do in relation to technology and electronic/digital literacy. These standards generally parallel and go beyond the standards—designating three different levels of teacher preparation and possible certification. For example, a teacher would be expected to demonstrate ability to facilitate accomplishment of the technology standards in "individual, small group, classroom, and/or lab settings" and "design, develop, and maintain Web pages and sites that support communication between the school and community" (ISTE 2001, pp. 14-15).

Being able to access, judge, and communicate information in digital formats is becoming central to ongoing education, employment, and participation in our society. Adult educators are increasingly being called upon to prepare adult learners to higher academic standards required for transitions to postsecondary education and employment. Mastering digital literacy is a large and growing part of these standards. In addition, it appears likely that for adults with low education and income levels, adult education classes may be the only place where they may find access to both the technology and education they need.

Environmental Literacy

by Ralf St. Clair

As the notion of literacy broadens and becomes multiplied, different areas of action and interest start to come together. I am a professor of adult literacy with direct teaching experience in local programs and also a transportation activist working to promote cycling and public transit, and have been pleased and interested to see these two areas of my life come together in environmental literacy. Using literacy in this context provides insights into the way environmental information is both understood and used as a resource for action by highlighting its role as a source of shared symbols for environmentally engaged citizens. In order for it to be truly meaningful, environmental literacy requires a fairly well-developed knowledge of environmental science along with the ability and willingness to act upon that knowledge. In this way, environmental literacy is a good example of the mix of information and action that take literacies beyond instrumentalism toward effective critique.

The Meaning of Environmental Literacy

Although the idea of environmental literacy appears to be a long way from the traditional idea of literacy as reading and writing text, it is one of the oldest explicit uses of literacy in a nontext-based context. Charles E. Roth coined the term in 1968 and refined it over the next 25 years, explaining that—

> environmental literacy is essentially the capacity to perceive and interpret the relative health of environmental systems and take appropriate action to maintain, restore, or improve the health of those systems. (Roth 1992, cited in Disinger and Roth 1992, p. 2)

Environmental literacy requires knowledgeable, critical engagement with environmental issues and the ability to form judgments about the likely impact of human activities upon the environment.

This definition, if considered in more than a trivial way, contains many implications. It suggests that environmental literacy requires knowledgeable, critical engagement with environmental issues and the ability to form judgments about the likely impact of human activities upon the environment. Similarly, this form of environmental literacy calls upon people to act—to follow up their judgments with some form of intervention. Since environmental issues are very often public issues (such as road building, use of green space, food regulation, and so forth) this suggests that political activity is a necessary component of environmental literacy. As with any set of critical literacy practices, environmental literacy is complex, beyond reduction to a one-dimensional set of skills.

It is also important to acknowledge that environmental literacy cannot be considered as an "add-on" form of literacy available only to those interested or privileged enough. If our planet is to have a sustainable future, we must all be environmentally literate, as recognized by UNESCO (1990): "Environmental literacy is no small part of effective, functional literacy, indeed, of the very essentials for a nation's sustainable development" (p. 2).

Environmental literacy has received a great deal more attention in the formal education sector—both K-12 and college level—than in adult education. However, it should be acknowledged that the practice of environmental literacy education is far broader than formal education, and many of the most vital and effective examples have occurred in local social movements. Environmental literacy is especially interesting because it can be woven effectively into initial literacy acquisition or treated as an additional set of strategies for those already comfortable with other forms of literacy. When reviewing the literature, however, many aspects and applications of environmental literacy remain obscured by the sheer volume of writing based on schools and colleges.

Within the formal education system, environmental literacy has tended primarily to attract the attention of science educators, though there has been some interest in social studies. Several states have well-developed plans and curricula for environmental literacy, one good example being the Illinois Department of Natural Resources curriculum (2002). Originally released in 1995, the plan calls for a lifelong learning approach to environmental literacy, though it is disappoint-

ing to note that the direct provision of environmental literacy education is strongly focused on school-age learners.

The content boundaries of environmental literacy remain quite unclear despite the work of K-12 educators. Illinois Department of Natural Resources (2002), for example, suggests:

> To be effective, environmental education programs should include subjects related to (1) knowledge of environmental processes and systems, including the Earth as a physical system, the living environment, humans and their societies, and environment and society; (2) questioning and analysis skills; (3) environmental issues investigation skills; (4) decision and citizenship skills; and (5) personal and civic responsibility. (p. 6)

The sheer scope of knowledge called for by this approach suggests that environmental literacy cannot easily be contained within one discipline, and the traditional placement of environmental education within science lessons appears unrealistic due to the range of resources necessary for environmental literacy. This leads to a major controversy within the K-12 environmental literacy community. On one side are those like the Independent Commission on Environmental Education who call for environmental educators to place "primary emphasis on the acquisition of knowledge" (Salmon 2000, p. 7). This side of the debate emphasizes scientific understanding as the center of environmental literacy. On the other side are those who believe the issue is best approached through social sciences. For example, one article argues that "to understand, analyze, and create appropriate solutions to complex environmental issues, decision makers must understand society and the processes that shape it" (McKewon-Ice and Dendinger 2000, p. 37). Interestingly, both of these extracts come from a single issue of the same journal, and the debate is reminiscent of the "whole language" versus "phonics" discussion. It appears likely that, just as with the phonics debate, the most effective approach is eclectic, recognizing the value of both scientific knowledge and the political awareness to put it into action.

Issues in Developing Environmental Literacy for Adults

A number of significant reasons for development of environmental literacy for adults have been advanced, including the following (National Institute of Adult Continuing Education 1993):

- There is insufficient time to wait for younger generations to mature before environmental action is taken.
- Environmental education must be lifelong.
- Understanding of environmental issues changes over time.
- Adults have to change if the environmental education of children is to have credibility.
- Environmental change requires engagement of the widest possible range of people.

This list suggests that environmental literacy should be a more common provision. However, putting environmental literacy education for adults into place is complex and requires consideration of both educational and contextual factors. Educational movements intending to bring about social change must engage strongly with their context in order to understand the effects of, and reactions to, their endeavors (cf. Freire 1970; Horton 1990). One of the most challenging contextual questions of environmental literacy is whether the negative ecological impact of humans is truly an educational problem (Mager and Pipe 1970). There is some evidence that it takes more than education for people to become committed to environmental action. One study of environmental activists in Kentucky and Norway (Chawla 1999) found that education was mentioned as a source of commitment by 38% of overall respondents. Experience of natural areas (77%), family (64%), and participation in environmental or outdoors organizations (55%) were mentioned significantly more frequently. This raises an interesting question—given the finite resources available to environmental education generally, does it make more sense to focus on exposing individuals to the environmental impact of humans directly, rather than trying a traditional educational approach? Or would it make even more sense, if change is really the aim, to give up on education and concentrate on legislated responses to environmental problems? In

other words, is it better to use resources trying to educate everybody to recycle plastics, or attempting to persuade legislators to mandate recycling? The former is clearly an educational approach, but the second is far more directly political.

An irony lies at the heart of the accepted approach to environmental literacy. The emphasis upon scientific understanding enshrines Western science as the primary means for humans to engage with the environment. However, it should be noted that there are many ways of looking at the relationship between our species and nature. It seems peculiar to emphasize the Western scientific perspective—the perspective underpinning the current ecological crisis—as the most useful way to address that crisis (cf. Spretnak 1993). If critical thought and action are indeed central components of environmental literacy, surely critical reflection upon Western science is one of the most fundamental and potentially insightful aspects of education for environmental literacy. Science cannot be accepted as a neutral endeavour made to serve more or less desirable ends, but its inherent assumptions about nature and the place of humans should be examined.

Critical reflection upon Western science is one of the most fundamental and potentially insightful aspects of education for environmental literacy.

The question of scientific knowledge is important in a further way. The assumption that environmental literacy requires a high (and relatively uncommon) level of training in scientific thinking could create an elite of environmentally literate citizens and a mass of people who either follow along or are completely excluded from informed environmental action. Ecofeminist writers in particular have done a good job of identifying and addressing this problem. Spretnak (1993) argues that the assumption that the human is separate from the natural world—a fundamental belief of Western science since the time of Bacon—leads to isolated and harmful judgments about environmental issues. Instead, many ecofeminist theorists suggest there is a need to develop connective ways to look at the environment, based on what humans share with each other and the natural world rather than what sets us apart:

> A new science should never lose sight of the fact that we are part of Nature, that we have a body, that we are dependent on Mother Earth, that we are born by women, and that we die. It should never lead to the abdication of our senses as a source of knowledge. (Mies 1993, p. 52)

Environmental Literacy Education in Action

It is relatively easy to find examples of environmental literacy education in formal education settings, but the implications for action are not often clear. There are, however, some excellent examples of action-oriented attempts to raise the environmental literacy of specific populations carried out by nonprofit organizations. One interesting question when looking at such organizations is whether the strongest educational impact is on the public (as the organization usually claims) or on the membership (who receive a pragmatic and pervasive apprenticeship in the issues). In this discussion, I focus on the public education efforts of one environmental organization—the Wilderness Committee based in Western Canada.

The Wilderness Committee was formed in 1980 around an explicitly educational concern that there was insufficient information available to the public about Western Canada's wilderness and the threats to its survival (Wilderness Committee 2003). Having been established in Vancouver, the Wilderness Committee has done a great deal of work on protection of old growth forest, including Clayoquot Sound (which became an internationally known campaign). The organization has remained tightly focused on distributing information on the protection of pristine land from commercial exploitation, and it claims an impressive list of successes (ibid.).

One of the interesting aspects of the Wilderness Committee is the extent to which their efforts are compatible with the notion of increased environmental literacy. They have published and distributed over 120 editions of free newspapers (over 9 million copies altogether), 12 books, 10 videos, and many technical and research briefs. In addition, the Wilderness Committee has developed and presented hundreds of lectures, slide shows, and presentations for public hearings, schools, and public events reaching over 100,000 people every year (ibid.). Each of these

efforts is an attempt to increase the environmental literacy of the public in the hope that they will take action to protect the remaining wilderness areas of Canada.

Widespread development of environmental literacy education requires learners and resources to come together. The Wilderness Committee mainly produces the resources that are used by educators and other interested people to support the practices that make up environmental literacy. Other organizations set out to weave environmental literacy more tightly into adult basic education, one outstanding example being the ***Change Agent*** (2000). This issue of the newspaper and resource for adult literacy learners investigates a number of environmental questions including recycling and the greenhouse effect. If educators and learners view environmental literacy as important to their lives, there are many materials and a great deal of information available, for readers at every level of comfort with reading and writing.

Strategies for Environmental Literacy Education

Given the issues of environmental literacy discussed earlier, and the widespread availability of high-quality resources, it makes sense for environmental literacy educators to localize environmental issues as much as possible, a strategy borrowed from other forms of political literacy (Freire 1970). For example, the sustained success of the Wilderness Committee is based to some extent upon their continued focus on what matters to Western Canadians—preservation of wilderness areas. The Wilderness Committee educate only on the basic knowledge relevant to wilderness preservation and deliberately do not tackle wider topics of environmental education. This does not imply that scientific knowledge is unimportant, but science is only one resource for action, to be considered alongside experience, ethics, political interests, and other vital concerns. Adults are motivated to learn and to act by things they care about rather than by abstract concerns. One critical job of educators is to show people why they should be interested in the environment before expecting them to acknowledge its importance and develop environmental literacy. In some circumstances, the action component of environmental literacy may precede the full scientific understanding of the issues.

There are several further strategies for effective localization of adult environmental literacy education. Educators may benefit from spending time with learners working out exactly what issue they will address together, and based on that, what resources or scientific knowledge are necessary. In addition, alliances with social movements and other groups interested in similar issues would be helpful. The curriculum, however loosely defined, must include elements of the learner's experience and attempt to recognize diversity as widely as possible. Finally, it is important to decide what environmental literacy means to educators and learners, and what kind of outcome will result from the educational process. By applying these strategies, educators will make environmental literacy relevant and motivating for participants and ensure the incorporation of critical issues from their lives.

Closing Thoughts

Environmental literacy demonstrates how far literacy can be taken beyond the conventional notion of reading and writing and still have meaning. In this case, decoding is about making sense of the world rather than written symbols, and critique is about social action rather than reflection on text, but the basic framework resembles any other critical literacy. Knowledge and action come together to create a deeper form of understanding.

At the same time, environmental literacy does raise challenges for instructors. It may require adult basic education staff and volunteers to learn a whole new field in order to feel comfortable, and even encouraging learners to reflect on environmental issues may not be compatible with instructors' political or pedagogical beliefs. As literacies become more explicitly focused on critique, and hence political, it is likely that responses to learning and teaching those literacies will become more polarized. It will be interesting to see how this dilemma will be worked out in environmental and other controversial forms of literacy.

Health Literacy beyond Basic Skills

by Sandra Kerka

In contemporary society, a constellation of changes has complicated the challenge of being healthy: the health care system's shift from a paternalist to a partnership model, with more individual responsibility for prevention and informed decision making and consent; complex choices about insurance; the need for self-management of chronic conditions such as diabetes and high blood pressure; and responsibility for both children's and elders' health care. Adults at all literacy levels must cope with conflicting media reports about environmental health hazards, diet and nutrition, the safety of hormone replacement therapy, and the appropriate frequency of screening tests; myths and misconceptions about communicable diseases such as smallpox, anthrax, and SARS; pharmaceutical company advertising about new drugs; and the vast amounts of health information now available on the Internet.

The relationship between health and literacy is often discussed in terms of the health-related problems that may be associated with low literacy. However, health literacy is an issue that spans education and age levels. This chapter looks beyond adult basic education to address issues of health and literacy for all adults and educational responses to them.

Health literacy is an issue that spans education and age levels.

One definition of health literacy is the capacity to obtain, interpret, understand, and use information to promote and maintain health (Greenberg 2001; Shohet 2002). Individuals must be able to evaluate information for credibility and quality, analyze relative risks and benefits, calculate dosages, interpret test results, and locate health information, tasks that may require visual, computer, information, and computational literacy (Sullivan 2000). Pridmore (2001) defines health literacy in terms of *health knowledge* (ranging from ability to read, comprehend, and implement simple health communications to the ability to make sense of and reflect critically on more complex information), *social skills* (ability and confidence to express one's views clearly, listen and ask questions, and articulate health concerns and symptoms), and *dispositional factors* (attitudes, motivation, and behavioral intentions). A model devised by Nutbeam (1999) depicts three levels of health literacy that encompass the skills and abilities in these various definitions:

1. **Functional health literacy**—basic reading and writing skills to understand and follow simple health messages

2. **Interactive health literacy**—more advanced literacy, cognitive, and interpersonal skills to manage health in partnership with professionals

3. **Critical health literacy**—the ability to analyze information critically, increase awareness, and participate in action to address barriers

Research documenting links between levels of education and health outcomes (Hammond 2002; "Literacy and Health" 2002) suggests that people with higher educational attainment may have a health advantage. However, health literacy is not identical to general literacy (Davis et al. 2002). Dagostino and Carifio (1999) call health literacy one of the specialized literacies that require conceptual knowledge bases, specific skills, and the ability to apply them. The attributes they describe are not automatically achieved by knowing how to read and write. Health literacy issues that go beyond basic skills include—

- Communication of health information
- Literacy and health as cultural and social practices
- The relationship among health information, literacy, and behavior
- The impact of the Internet on the use of health information

Communication of Health Information

Numerous studies have demonstrated that many written health materials such as pamphlets, self-care instructions, and insurance forms require a high reading level (Davis et al. 2002). Greenberg (2001) cites a study showing that even college-educated individuals have difficulty understanding information on the benefits and risks of mammography. The medical literature has emphasized simplification, or plain language, and the use of visual aids and pictographs for low-literacy patients, although Greenberg suggests that all patients would benefit from easy-to-understand directions. However, many writers caution against overreliance on plain language. McConnell-Imbriotis' (2001) analysis of literature for diabetes patients shows that simplification can hinder learning even for highly literate people if they have no context for understanding unfamiliar concepts. Brevity can lead to the use of narrow, ethnocentric examples and oversimplification of critical information. Multiple factors beyond readability and presentation may influence consumer use of health information, including patients' demographic characteristics, health locus of control, beliefs, and environmental factors such as timing and experience (Koo, Krass, and Aslani 2003).

Plain language is useful but not the primary solution: written communication should supplement physician-patient conversations (Shohet 2002). The problem is that physicians often use language not readily understood by the general public. Even when physicians think they are using "everyday" language, patients do not perceive it as such (Davis et al. 2002). Immediately after leaving the doctor's office, patients typically are able to recall only half of what they heard (Williams et al. 2002). Physicians' attitude and self-assessment play a role; Lukoschek et al. (2003) found that physicians who believed health information delivery to be important had fewer patients with comprehension difficulties, whereas those who thought they were very effective educators had significantly more patients with lack of comprehension. Freebody and Freiberg (1997) identify the role that expert knowledge and the protection of a professional elite play in health care communication difficulties. They urge recognition of both literacy and health as sets of cultural and social practices, as well as understanding of the ways in which communication patterns act to position people with respect to knowledge and medical care.

Literacy and Health as Cultural and Social Practices

Research on health and literacy often categorizes people demographically (e.g., geographic location, income, ethnicity, age, literacy level) and attaches health risk variables to these categories. According to Freebody and Freiberg (1997) this limited discourse ignores the literacy practices of social and cultural groups. Greenberg (2001) points out how basic definitions of health literacy fail to recognize the role of cultural belief systems and social norms. Health literacy in one language or culture may not transfer to another (Wilson 2001). The cultural expectations of the health care system may clash with those of the patient; there may be tensions between the system's emphasis on individual care and a cultural view of health as a collective responsibility (Robinson and Gilmartin 2002). Miscommunication may occur because of speakers of other languages may have different meanings for words and phrases to express health problems (ibid.). In Davis and Flannery's (2001) study, Puerto Rican women found health information trustworthy when its sources were compatible with cultural beliefs and values. Kakai et al. (2003) observed different patterns of health information sources among Caucasian, Japanese, and Pacific Islander cancer patients; ethnicity overrode educational level in shaping their choices of health information. Key social relationships enabled the health of less-educated men to parallel that of men with higher education (Antonucci et al. 2003), suggesting that social networks and practices may moderate the effects of low literacy on health. Fitzclarence and Dellit (2002) used the film "Lorenzo's Oil" to illustrate how even individuals with similar cultural background as medical professionals might be challenged by the literacy demands of the health care culture. These findings indicate that health literacy depends on context, and individuals' cultural world views and social practices must be taken into account in determining their level of health literacy.

Health literacy in one language or culture may not transfer to another.

Health Information, Literacy, and Behavior

The effect of context on health literacy is also seen in examining its relationship with health behavior. People who are highly literate in other situations may have difficulty dealing with health information when they are ill and coping with emotional trauma and stress (Freebody and Freiberg 1997; Wilson 2001). Highly literate individuals can become low-literate patients because of cognitive or physical disabilities such as visual impairment. The way in which information is presented can influence patients' consent for health treatments. Wills and Holmes-Rovner (2003) summarized research findings on the use of health information by type of format (probability, graphic, and qualitative/quantitative). They found that "even well-educated people experience difficulty with mathematical operations underlying understanding of risk magnitudes" (p. 287).

Age can be a compounding factor. Older adults experience more chronic illness and must learn more new medical information and procedures (Brown and Park 2002). When Brown and Park compared older and younger adults' recall of new information on familiar and unfamiliar diseases, both groups learned more about the unfamiliar, suggesting that prior knowledge may hinder learning of new information on the same topic. The older group consistently learned less regardless of familiarity. When Benson and Forman (2002) gave the Test of Functional Health Literacy to 93 affluent, well-educated older adults, 30% had poor comprehension of written health information, especially informed-consent forms and numeracy-related questions such as blood sugar numbers. They concluded that comprehension problems may reflect age-related difficulty with the skills required for health literacy.

Other studies show that "high literacy levels are no guarantee that a person will respond in a desired way to health education and communication activities" (Nutbeam 1999, p. 52). Most of a group of college-educated people surveyed by Ludwig and Turner (2002) overestimated industrial radiation risks and underestimated medical radiation risks. In a phone survey of 400 adults (77% college educated), 55% were unaware of the Dietary Guidelines for Americans and many misinterpreted and misapplied these ambiguously written standards (Keenan, AbuSabha, and Robinson 2002). Besides health knowledge and health literacy, factors that affect the adoption of health behavior include perception of risk, self-efficacy beliefs, physical environment, and perceived costs and benefits (Gordon 2002).

Health Information on the Internet

The Internet is another context in which health literacy is crucial. Internet users tend to have higher literacy levels and access to the vast amounts of health information available online, and this information can empower consumers to participate actively in their health care and challenge the decisions of health care and insurance providers. However, as Henwood et al. (2003) found, the emergence of the informed or empowered consumer may be constrained by patient dependence on expert knowledge and the fact that digital sources of health information require overlapping literacies, including electronic, information, and computer literacy. In addition, critical literacy is essential because of concerns about reliability and accuracy, access to information that lay persons may lack the background to interpret, the potential dangers of self-diagnosis and treatment, and the potential bias of commercial websites such as those of pharmaceutical companies.

Internet users interviewed by Eysenbach and Köhler (2002) recognized ways to access the credibility of websites, but in an observational study, none of them used these criteria to verify health information. A Harris Poll (HarrisInteractive 2002) found that 93% of Americans surveyed trusted online health information, 85% found it easy to understand, and 82% judged it to have good quality. For both high- and low-literate individuals, critical "cyberliteracy" is necessary for effective and safe use of Internet-based health information. Projects such as MedCIRCLE, the Collaborative

for Internet Rating, Certification, Labeling, and Evaluation of Health Information (www.medcircle.org) and the Health on the Net Foundation (www.hon.ch/) can help educate consumers of online health information.

Recommendations for Improving Health Literacy

The research discussed here indicates that high levels of literacy in one context do not automatically transfer to other contexts. Factors such as the complex and changing health care environment; the way health information is communicated in print, online, and interpersonally; the effects of the intersecting cultures and practices of the health profession, the individual, and the dominant society; and the gap between knowledge/information and behavior suggest a need to increase the health literacy skills of *all* adults as well as the communication skills of the health profession. How can adult educators respond?

There is a need to increase the health literacy skills of all adults as well as the communication skills of the health profession.

The System for Adult Basic Education Support in Massachusetts outlined the components of an effective health literacy system that is applicable across all adult education settings. The system, which involves many levels of educational, health care, and community service providers, includes the following (Wilson 2001):

- An information creation and dissemination system providing materials that are readable, comprehensible, trustworthy, and culturally sensitive
- A coordinated health literacy learning system
- A health literacy measurement and assessment system
- A formal and informal health decision-making advice system, including a hotline, handbook, online supports, and library resources
- A professional health provider learning system

Recommendations for using effective adult learning principles in health literacy development include the following (McConnell-Imbriotis 2001; Shohet 2002; Wilson 2001):

- Assist adults in acquiring critical literacy skills
- Link learning to adults' prior health consumer experiences; instruction should meet the needs of broad cultural, economic, and social groups; be delivered for a variety of learning styles; and be specifically targeted to client concerns and learning goals
- Help adults meet specific health literacy learning goals related to their own and their family's needs
- Provide literacy learning experiences that are contextual and experiential
- Involve adults in planning their own health literacy learning by using participatory approaches linked to individual and community empowerment

Freebody and Freiberg (1997) characterize literacy as both critical, purposeful, accurate management of print, visual, and other information and as cultural savvy—reading the world. In order to help adults reach the functional, interactive, and critical health literacy levels envisioned by Nutbeam (1999), health literacy should move beyond a focus on basic skills toward individual and communal efficacy for change.

Literacies Resource List

The categories of resources listed here are intended to provide an adult education perspective on a selection of the multiple literacies needed for adult life in the 21st century.

Multiple Literacies

Bull, G., and Anstey, M. ***The Literacy Lexicon, 2d ed.*** Frenchs Forest, NSW: Pearson Education Australia, 2003.
Explores new and established theories, definitions, and applications of literacy. Chapters include Literacy and Social Minds (James Paul Gee); Critical Literacies and Cultural Studies (Allan Luke, Barbara Comber, and Helen Grant); Literacy as Engaging with New Forms of Life: The "Four Roles" Model (Peter Freebody and Allan Luke); and Literacy, Culture and Technology (Colin Lankshear and Michele Knobel).

Hagood, M. C. "New Times, New Millennium, New Literacies." ***Reading Research and Instruction*** 39, no. 4 (Summer 2000): 311-328.
Conceptualizes literacy as a social practice consisting of multiliteracies. Presents recommendations that address diversity in "d/Discourses," identities, and literacy practices.

Street, B. "What's 'New' in New Literacy Studies? Critical Approaches to Literacy in Theory and Practice." ***Current Issues in Comparative Education*** 5, no. 2 (May 2003): 1-14.
Literacy is always contested, both its meanings and its practices, hence particular versions of it are always "ideological"; they are always rooted in a particular world view and in a desire for that view of literacy to dominate and to marginalize others. The New Literacy Studies model offers a more culturally sensitive view of literacy practices as they vary from one context to another.

Wood, J. W. "Defining Literacies." Paper presented at the Annual Meeting of the American Educational Research Association, New Orleans, LA, April 2-5, 2002. (ERIC Document Reproduction Service No. ED 465 980)
Literacies are multiple and are created and used through a critical process that is social, psychological, and semiotic. A broader, more inclusive definition of literacies is required, one that encompasses any form of communication.

Critical Literacy

Bradshaw, D., ed. ***Knowledge of Texts: Theory and Practice in Critical Literacy***. Melbourne, Australia: National Languages and Literacy Institute, 1998. (ERIC Document Reproduction Service No. ED 419 932)
Contains eight case studies of critical literacy in action: "Making the Time and Space for Critical Literacy: Why Bother?" (Barbara Comber); "Questioning Text: Critical Literacy in an ALBE Classroom" (Fran O'Neill); "Critical Literacy and Numeracy in the Print Industry" (Helena Spyrou, Ivan Parrett); "Fairy Stories and Critical Literacy" (Clara Brack); "Developing Critical Writing Practices in a Community Education Setting" (Barbara Kamler); "'We Have To Learn to Say Things Very Clearly...'" (Michele Lucas); "Modelling Critical Literacy in Teacher Education" (Beverley Campbell); and "'Despite All My Rage, I'm Still a Rat in a Cage'" (Ray Misson).

Janks, H. "Domination, Access, Diversity and Design: A Synthesis for Critical Literacy Education." ***Educational Review*** 52, no. 2 (June 2000): 175-186.
Different perspectives on critical literacy emphasize the relationship between language and power in terms of domination, access, diversity, or design. These orientations are interdependent, and all must be woven together to achieve the goal of critical literacy: equity and social justice.

Peters, S. "Transforming Disability Identity through Critical Literacy and the Cultural Politics of Language." In ***Disability Discourse***, edited by M. Corker and S. French, pp. 103-115. Buckingham, England; Philadelphia, PA: Open University Press, 1999.

Analyzes the discourse of disability from a critical literacy perspective, drawing upon sociolinguistic perspectives on literacy and the multidimensional and multifunctional role of language.

Warnick, B. ***Critical Literacy in a Digital Era: Technology, Rhetoric, and the Public Interest***. Mahwah, NJ: Lawrence Erlbaum Associates, 2002.
Examines the persuasive strategies used in discourse on and about the Internet using a critical literacy framework based on the principle that everyone should, insofar as possible, become aware of what is assumed, unquestioned, and naturalized in our media experience. Addresses the question: Whom does technology serve?

Civic Literacy

The Change Agent (semiannual). New England Literacy Resource Center, http://www.nelrc.org/changeagent/index.htm
Provides a low-cost teaching resource that inspires and enables teachers and learners to make civic participation and social justice part of their teaching and learning. Each issue explores a different social justice topic.

Imel, S. ***Adult Civic Education. Practice Application Brief No. 30.*** Columbus: ERIC Clearinghouse on Adult, Career, and Vocational Education, the Ohio State University, 2003. http://cete.org/acve
Adult civic education is intended to inform learners of the rights and responsibilities of citizenship, explain how citizens participate in building a society by making informed decisions, and foster development of action. Approaches to adult civic education include the liberal, the radical, and a "third way" or philosophical orientation that supports the development of reflexive citizenship and supports individuals as they learn to deal with diversity in politics and social practices.

Milner, H. ***Civic Literacy: How Informed Citizens Make Democracy***. Hanover, NH: University Press of New England, 2002.
A comparative analysis of participation in western Europe, the United States, Canada, Australia, and New Zealand uses civic literacy to measure the degree of political involvement in Western democracies, focusing primarily on turnout in local elections. Results demonstrate that civic literacy predicts not only levels of engagement but government response to a participatory electorate.

Parsons, M. H., and Lisman, C. D., eds. ***Promoting Community Renewal through Civic Literacy and Service Learning. New Directions for Community Colleges, Number 93***. San Francisco: Jossey-Bass, Spring 1996. (ERIC Document Reproduction Service No. ED 392 510)
Based on the idea that community colleges have a critical role in enhancing civic literacy through community-based programming and service learning, the 10 articles in this volume provide descriptions of theoretical frameworks and practical models for incorporating community renewal into the college mission.

Digital/ Electronic Literacy

Currents in Electronic Literacy: http://www.cwrl.utexas.edu/currents/purpose.html
Electronic journal published by the Computer Writing and Research Lab of the Division of Rhetoric and Composition at the University of Texas at Austin. Its purpose is to provide for the scholarly discussion of issues pertaining to electronic literacy.

Dickinson, S. C. "Taking Care of Business: The Repercussions of Commodified Electronic Literacy." Paper presented at the Annual Meeting of the Conference on College Composition and Communication, Denver, CO, March 14-17, 2001. (ERIC Document Reproduction Service No. ED 451 538)
The commodification of literacy as a result of the current explosion in electronic consumerism has received little attention. The persuasion inherent in the rhetoric of electronic advertising needs to be addressed through a visual literacy based on Paulo Freire's critical literacy to understand and counter this commercial intrusion.

Richards, C. "Hypermedia, Internet Communication, and the Challenge of Redefining Literacy in the Electronic Age." ***Language Learning & Technology*** 4, no. 2 (September 2000): 59-73.
Argues that dominant hypermedia models of electronic literacy are too limited to do justice to new media and changing views of literacy in the electronic age, especially in terms of their recourse to postmodern theories of representation. Critiques a general hypermedia perspective in order to develop a more integrated, relevant, and grounded theory of electronic literacy.

Stanley, L. D. "Beyond Access: Psychosocial Barriers to Computer Literacy." ***Information Society*** 19, no. 5 (November 2003): 407-416.
Research consistently indicates that Latinos and African-Americans are less likely to own and use computers. Although conventional wisdom holds that high computer costs and lack of access are the primary reasons for this discrepancy, a study of 100 low-income adults reveals three noncost-related psychosocial obstacles: relevance, fear, and self-concept. Efforts to increase computer literacy in underserved communities must go beyond physical access and connectivity and consider the role of cultural factors.

Environmental Literacy

Clover, D. E., and Hill, L. H., eds. ***Environmental Adult Education: Ecological Learning, Theory, and Practice for Socio-Environmental Change. New Directions for Adult and Continuing Education*** no. 99. San Francisco: Jossey-Bass, Fall 2003.
Contains nine articles examining aspects of environmental adult education, including an exploration of language, metaphor, and spirituality in relation to nature; critical environmental literacy for adults; and learning environments and environmental education.

Lowe, I. "The Need for Environmental Literacy." Commissioned paper for the Adult Literacy and Numeracy Australian Research Consortium Online Forum, March 15-April 19, 2002. http://www.staff.vu.edu.au/alnarc/onlineforum/AL_pap_lowe.htm
The content of environmental literacy must be broader than an emphasis on environmental science. It should include the social, economic, and political dimensions of our interaction with natural systems and recognize that this interaction is driven by social factors and steeped in dominant cultural values.

Moseley, C. "Teaching for Environmental Literacy." ***Clearing House*** 74, no. 1 (September-October 2000): 23-24.
Outlines a continuum (nominal, functional, and operational environmental literacy) along which individuals progress. Argues that environmental awareness and knowledge are not enough: acquiring responsible environmental action skills must be the ultimate goal of environmental literacy.

Financial Literacy

Bond, M. "Understanding the Benefits/Wages Connection: Financial Literacy for Citizenship in a Risk Society." ***Studies in the Education of Adults*** 32, no. 1 (April 2000): 63-77.
Adults with limited financial literacy skills must cope with understanding the interrelationship among wages, social security, and welfare systems. Radical adult education can help them make informed decisions about the financial consequences of moving from welfare to work.

Bond, M., and Boucher, A. "Towards Developing Financial Literacy Programmes for Adults." ***Journal of Access and Credit Studies*** 2, no. 1 (Spring 2000): 19-32.
In the context of increased labor market flexibility and portfolio work, adults need knowledge of financial services and their interrelationships with insurance, taxation, and welfare systems. One approach uses the radical tradition of adult education to help people develop critical awareness and control of their financial decision making.

Braunstein, S., and Welch, C. "Financial Literacy: An Overview of Practice, Research, and Policy." ***Federal Reserve Bulletin*** 88, no. 11 (November 2002): 445-457.
Identifies factors contributing to increased need for financial literacy in the United States. Describes the scope and providers of financial literacy training and the findings of empirical studies of these programs. Outlines essential elements for the design and delivery of financial literacy education.

Carlton, S.; Soulsby, J.; and Whitelegg, D. ***Old Money: Financial Understanding for Older Adult Learners***. Leicester, UK: National Institute for Adult and Continuing Education, 2002.
This policy discussion paper includes a review of current programs for adult learners in Britain and reports focus group findings that many older people are interested in developing their financial understanding and skills, though only a few wanted sophisticated knowledge about such things as the stock market. The use of a life-stages approach in adult financial literacy' programs is recommended.

Hajaj, K. "Illiteracy, Financial Services and Social Exclusion." Commissioned paper for the Adult Literacy and Numeracy Australian Research Consortium Online Forum, March 15-April 19, 2002. http://www.staff.vu.edu.au/alnarc/onlineforum/AL_pap_hajaj.htm
The following factors make consumers particularly susceptible to the financial exclusion that stems from lack of financial literacy: low income, age, non-English-speaking background, disabilities, and literacy difficulties. Government policies of deregulation and economic rationalism, lack of consumer education, and lack of concern on the part of the financial services sector contribute to social exclusion and alienation.

Geographic Literacy

Nolan, R. E. "Geo-Literacy: How Well Adults Understand the World in Which They Live." ***Adult Basic Education*** 12, no. 3 (Fall 2002): 134-144.
A test of physical and geopolitical geography was completed by 321 adults. Informal learning (travel, reading, media) was a primary source of geographic knowledge. Women, regardless of education level, scored significantly lower than men.

Health Literacy

Graber, M. A.; D'Alessandro, D. M.; and Johnson-West, J. "Reading Level of Privacy Policies on Internet Health Web Sites." ***Journal of Family Practice*** 51, no. 7 (July 2002): 642-645.
Of the 80 Internet health websites studied, 30% had no privacy policy posted. The average readability level of the remaining sites required years of college-level education to comprehend, and no website had a privacy policy that was comprehensible by most English-speaking individuals in the United States.

Henwood, F.; Wyatt, S.; Hart, A.; and Smith, J. "'Ignorance Is Bliss Sometimes': Constraints on the Emergence of the "Informed Patient' in the Changing Landscapes of Health Information." ***Sociology of Health and Illness*** 25, no. 6 (September 2003): 589-607.
Analysis of women's health-related information practices identified constraints on the emergence of the informed patient: many patients do not want to take responsibility or seek out information for themselves, some patients lack the skills and competencies of information literacy, and some practitioners are reluctant to take on a partnership role with empowered patients.

Nutbeam, D. "Health Literacy as a Public Health Goal: A Challenge for Contemporary Health Education and Communication Strategies into the 21st Century." ***Health Promotion International*** 15, no. 3 (2000): 259-267.
Improving health literacy is understood to mean more than transmitting information and developing skills to be able to read pamphlets and successfully make appointments. By improving people's access to health information and their capacity to use it effectively, improved health literacy is critical to empowerment.

Media Literacy

Pailliotet, A. W.; Semali, L.; Rodenberg, R. K.; Giles, J. K.; and Macaul, S. L. "Intermediality: Bridge to Critical Media Literacy." ***Reading Teacher*** 54, no. 2 (October 2000): 208-219.
Defines intermediality as the ability to critically read and write with and across varied symbol systems. Offers rationales for teaching critical media literacy in general and intermedial instruction in particular.

Palazon, M. "The Media and Transformative Learning." 2000. (ERIC Document Reproduction Service No. ED 443 971)
Through media literacy, educators can foster critical understanding that the media are not self-explanatory reflections of external reality but rather symbolic systems that must be read actively. Their message, words, and images, which represent different realities, encourage critical reflection and active learning.

Quinlisk, C. C. "Media Literacy in the ESL/EFL Classroom: Reading Images and Cultural Stories." ***TESOL Journal*** 12, no. 3 (Autumn 2003): 35-40.
Mass media offer a richness of linguistic input, but ESL/EFL students need to know how to interpret the messages being conveyed in order to understand and relate to the social and cultural practices and values of the target language community.

Technological and Scientific Literacy

Carlton, S. ***Life, the Universe and Almost Everything: The Value of Adults Learning in Science. A Policy Discussion Paper***. Leicester, England: National Institute of Adult Continuing Education, 2001. (ERIC Document Reproduction Service No. ED 468 653)
Includes suggestions for promoting more democratic access to dialogue and debate about science matters and to widen participation in related learning.

Cross, R. T., and Price, R. F. "The Social Responsibility of Science and the Public Understanding of Science." ***International Journal of Science Education*** 21, no. 7 (August 1999): 775-785.
Argues that citizens need to recognize that science is a human social activity like any other. Calls for socially responsible science and a public mindful of its strengths and weaknesses. Explores two case studies of public construction of knowledge about controversial health-related issues to illustrate the problematic nature of public understanding of science.

Lee, S., and Roth, W.-M. "Science and the 'Good Citizen': Community-Based Scientific Literacy." ***Science, Technology & Human Values*** 28, no. 3 (June 2003): 403-424.
Science literacy is frequently touted as a key to good citizenship. Analysis of an open house event organized by a grassroots environmentalist group provides examples of activities that embed science in "good citizenship," including the importance of multiple representations of the same entity, the relational aspect of knowing and becoming part of a community, and the insertion of scientific into moral discourse, resulting in a "stewardship triad."

Petrina, S. "The Politics of Technological Literacy." ***International Journal of Technology and Design Education*** 10, no. 2 (2000): 181-206.
Situates technological literacy in its ideological context of competitive supremacy. In opposition to a "neutral" notion of this construct, negotiates a turn toward critical technological literacy focused on examining forms of power that sustain inequities in the built world.

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